PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:
Jagannadha K. SASTRY, Ralph B. ARLINGHAUS, Chris D. PLATSOUCAS, and Pramod N. NEHETE

Serial No. 08/869,386

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For: METHODS AND COMPOSITIONS FOR ELICITING AN IMMUNE RESPONSE

Group Art Unit: 1813

Examiner: L. Smith

Atty. Dkt. No.: UTXC:538/HYL

DECLARATION OF JAGANNADHA K. SASTRY UNDER 37 C.F.R. §1.132

Assistant Commissioner of Patents
Washington, D.C. 20231

I, Jagannadha K. Sastry, do declare as follows:

1. I am a citizen of the United States, and currently reside in Bastrop, Texas. I am employed in the Departments of Veterinary Sciences and Molecular Pathology at The University

of Texas M.D. Anderson Cancer Center, Bastrop and Houston, TX, where I hold the position of Associate Professor. A copy of my *curriculum vitae* is attached.

2. I am the Jagannadha K. Sastry listed as an inventor for the above-captioned application and on the appended manuscript by Nehete *et al.* entitled "A Post CD-4 Binding Step Common to Infection by T-cell- and Macrophage-Tropic HIV-1 Strains Involves Cell Surface Interaction with the V3 Region of Viral gp120."

3. The studies performed in the Nehete *et al.* manuscript demonstrate that the central 15-21 amino acids in the V3 region of gp120 play an important role in HIV infection of $CD4^+$ cells. Peptides from this region bind to target host cells and inhibit the cellular entry of phenotypically distinct HIV-1 strains.

4. Interestingly, competition for peptide binding was observed with viral particles, but not with recombinant gp120, sCD4, β-chemokines or an antibody to CXCR-4.

5. I hereby declare that all statements made herein of my knowledge are true and that all statements made herein on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made

are punishable by fine or imprisonment or both, under §1001 of Title 18 of the U.S. Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

6/2/98
Date

Jagannadha K. Sastry, Ph.D.

CURRICULUM VITAE

Name: **JAGANNADHA K. SASTRY, Ph.D.**

Title and Affiliation:

a. **Primary appointment**:
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Education:

Ph.D.	1981, Microbiology	National Dairy Research Institute (Karnal, India)
M.S.	1974, Microbiology	G.B. Pant Univ. of Agriculture and Technology (Pantnager, India)
B.S.	1972, Biology/Chemistry	Andhra University (India)

Postgraduate Training:

Post-Doctoral Research Associate 9/81 - 8/84	Microbiology Department, UT Medical Branch Galveston, TX
Post-Doctoral Research Associate 11/79 - 8/81	Biological Sciences Department, Purdue University W. Lafayette, IN
Junior Research Fellow 1974 - 1977	Counsel for Scientific and Industrial Research, India, Ph.D. Student at Division of Microbiology, National Dairy Research Institute, Karnal, India

Graduate Research Assistant 1972 - 1974	M.S. Student, Department of Microbiology, G.B. Pant University of Agriculture and Technology Pantnager, India

Academic and Professional Appointments:

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Assistant Professor 1/97 - 8/98	The University of Texas M. D. Anderson Cancer Center, Department of Molecular Pathology, Houston, TX
Assistant Professor 9/94 - 8/98	The University of Texas M. D. Anderson Cancer Center, Science Park - Department of Veterinary Sciences, Bastrop, TX
Regular Member 9/93 - Present	Faculty of the Graduate School of Biomedical Sciences, The University of Texas M. D. Anderson Cancer Center, Houston, TX
Assistant Professor 3/95 - 12/96	The University of Texas M. D. Anderson Cancer Center, Science Park - Department of Carcinogenesis, Smithville, TX
Assistant Professor 9/93 - 3/95	The University of Texas M. D. Anderson Cancer Center, Department of Molecular Pathology, Houston, TX
Assistant Biochemist 1/88 - 8/93	The University of Texas M. D. Anderson Cancer Center, Department of Molecular Pathology, Houston, TX
Research Associate 9/84 - 12/87	The University of Texas M. D. Anderson Cancer Center, Department of Molecular Pathology, Houston, TX
UNESCO Fellow 10/78 - 9/79	Czechoslovak Academy of Sciences, Praha, Czechoslovakia
Senior Scientific Associate 12/77 - 10/78	Fermentation Technology, Central Food Technological Research Institute, Mysore, India

Committee Memberships:

a. **National and international**:

1996 - Present Member, Peer Review Team - United States-Israel Binational Science Foundation (BSF): Evaluate a minimum of one research grant per year for recommendation of funding

b. **Institutional Multidisciplinary Programs**:

1997 - Present Member, Human Immunotherapy Program, The University of Texas M. D. Anderson Cancer Center, Houston, TX

Society Memberships with Offices Held:

1980 - Present	Member, American Society for Microbiology
1988 - Present	Member, American Association for the Advancement of Science
1996 - Present	Member, American Association of Immunologists
1997 - Present	Member, International Society for Vaccines
1998 - Present	Member, International Society for Antiviral Research

Bibliography:

a. **Published and accepted articles in refereed journals**:

1. Sastry, K.J., and Mathur, D.K. Bacterial nisinase. Ind Diaryman *29(9)*:555-559, 1977

2. Ralhan, G.R., Sastry, K.J., and Mathur, D.K. Isolation, purification and characterization of nisinase producing bacteria from processed cheese. Ind J Dairy Sci *31(2)*:150-155, 1978

3. Sastry, K.J., and Mathur, D.K. Studies of milk clotting enzyme from Bacillus megaterium K-40: I. Effect of some nutrients on enzyme production. J Food Sci Technol *16(1)*:15-18, 1979

4. Sastry, K.J., and Mathur, D.K. Studies on milk clotting enzyme from Bacillus megaterium K-40: II. Effect of some environmental factors on enzyme production. J Food Sci Technol *16(1)*:19-21, 1979

5. Sastry, K.J., Stranadova, M., and Chaloupka, J. Synthesis of exocellular proteins during the exponential and stationary phase of growth of Bacillus megaterium. Folia Microbiol *26(2)*:73-77, 1981

6. Chaloupka, J., Severin, A.I., Sastry, K.J., Kucerova, H., and Stranadova, M. Differences in the regulation of exocellular proteinase synthesis during growth and sporulation of Bacillus megaterium. Can J Microbiol *28*:1214-1218, 1982

7. Sastry, K.J., Srivastava, O.P., Millet, J., Fitz-James, P.C., and Aronson, A.I. Characterization of Bacillus subtilis mutants with a temperature sensitive intracellular protease. J Bacteriol *153(1)*:511-519, 1983

8. Sastry, K.J., Chan, T.S., and Rodriguez, L.V. Selective overproduction of human dihydrofolate reductase in a methotrexate-resistant human-mouse somatic cell hybrid. Biochem Biophys Res Comm *132(2)*:795-803, 1985

9. Sastry, K.J., Huang, C., and Chan, T.S. Adenosine kinase deficiency in tritiated deoxyadenosine-resistant mouse S49 lymphoma cell lines. Biochem Genetics *25(11-12)*:765-777, 1987

10. Sastry, K.J., and Arlinghaus, R.B. A novel HIV vaccine strategy. Hematologic Pathol *4(3)*:157-159, 1990

11. Sastry, K.J., Reddy, R.H.R., Pandita, R., Totpal, K., and Aggarwal, B.B. HIV-1 *tat* gene induces tumor necrosis factor-ß (lymphotoxin) in a human B-lymphoblastoid cell line. J Biolog Chem *265(33)*:20091-20093, 1990

12. Sastry, K.J., and Arlinghaus, R.B. Identification of T-cell epitopes without B-cell activity in the first and second conserved regions of HIV Env protein. AIDS *5(6)*:699-707, 1991

13. Sastry, J.K., Nehete, P.N., Khan, S., Nowak, B.J., Plunkett, W., Arlinghaus, R.B., and Farquhar, D. Membrane-permeable dideoxyuridine 5'-monophosphate analogue inhibits human immunodeficiency virus infection. Mol Pharmacol *41(3)*:441-445, 1992

14. Sastry, K.J., Nehete, P.N., Venkatnarayanan, S., Morkowski, J., Platsoucas, C.D., and Arlinghaus, R.B. Rapid *in vivo* induction of HIV-specific $CD8^+$ cytotoxic T lymphocytes by a 15-amino acid unmodified free peptide from the immunodominant V3-loop of GP120. Virology *188(2)*:502-509, 1992

15. Nehete, P.N., Satterfield, W.C., Matherne, C.M., Arlinghaus, R.B., and Sastry, K.J. Induction of human immunodeficiency virus-specific T cell responses in rhesus monkeys by synthetic peptides from gp160. AIDS Res and Human Retroviruses *9(3)*:235-240, 1993

16. Nehete, P.N., Arlinghaus, R.B., and Sastry, K.J. Inhibition of human immunodeficiency virus type 1 infection and syncytium formation in human cells by V3 loop synthetic peptides from gp120. J Virol *67(11)*:6841-6846, 1993

17. Nehete, P.N., Arlinghaus, R.B., and Sastry, K.J. Use of helper T cell-inducing peptides from conserved regions in HIV-1 *env* in a noncovalent mixture with a CTL-inducing V3-loop peptide for *in vivo* induction of long-lasting systemic CTL response. Viral Immunol *7(4)*:189-197, 1994

18. Sastry, K.J., Bender, B.S., Bell, W., Small Jr., P.A., and Arlinghaus, R.B. Effects of influenza virus-specific cytotoxic T-lymphocyte responses induced by a synthetic nucleoprotein peptide on the survival of mice challenged with a lethal dose of virus. Vaccine *12(14)*:1281-1287, 1994

19. Nehete, P.N., Casement, K.S., Arlinghaus, R.B., and Sastry, K.J. Studies on *in vivo* induction of HIV-1 envelope-specific cytotoxic T lymphocytes by synthetic peptides from the V3 loop region of HIV-1 IIIB gp120. Cell Immunol *160(2)*:217-223, 1995

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23. Nehete, P.N., Johnson, P.C., Schapiro, S.J., Arlinghaus, R.B., and Sastry, K.J. Cross-reactive T-cell proliferative responses to V3 peptides corresponding to different geographical HIV-1 isolates in HIV-seropositive individuals. J Clin Immunol, *16(2)*:115-124, 1996

24. Mitchell, M.F., Hamada, K., Sastry, K.J., Sarkar, A., Tortolero-Luna, G., Wharton, J.T., and Roth, J.A. Transgene expression in the rhesus cervix mediated by an adenovirus expressing β-galactosidase. Am J Obstet Gynecol, *174(4)*:1094-1101, 1996

25. Sastry, K.J., Marin, M.C., Nehete, P.N., McConnell, K., El-Naggar, A.K., and McDonnell, T.J. Expression of human immunodeficiency virus type I tat results in down-regulation of bcl-2 and induction of apoptosis in hematopoietic cells. Oncogene *13(3)*:487-493, 1996

26. Casement, K.S., Arlinghaus, R.B., and Sastry, K.J. Cytotoxic T lymphocyte response induced by a V3 loop synthetic peptide from an African HIV-1 isolate is cross-reactive against HIV-1 strains from North America/Europe region. AIDS *10(12)*:1440-1441, 1996

27. Schapiro, S.J., Nehete, P.N., Perlman, J.E., Bloomsmith, M.A., and Sastry, K.J. Effects of dominance status and environmental enrichment on cell-mediated immunity in rhesus macaques. Appl Anim Behav Sci *56*:319-332, 1998

28. Oka, T., Sastry, K.J., Nehete, P., Schapiro, S.J., Guo, J.Q., Talpaz, M., and Arlinghaus, R.B. Evidence for specific immune response against P210 BCR-ABL in long-term remission CML patients treated with interferon. Leukemia *12*:155-163, 1998

b. **Published and accepted invited journal articles**:

1. Sastry, K.J., and Mathur, D.K. Studies on milk clotting enzyme from Bacillus megaterium K-40: III. Purification and characterization of the enzyme. International Dairy Congress, Moscow, USSR, 1982

2. Sastry, K.J., Nehete, P.N., Casement, K., Platsoucas, C.D., and Arlinghaus, R.B. Rapid induction of virus-specific MHC-restricted CTLs with short synthetic peptides. *In:* Vaccines 93, pp. 19-23. R.A. Lerner, F. Brown, and H.S. Ginsberg (eds.). Cold Spring Harbor Laboratory Press, Cold Spring Harbor, NY, 1993

3. Nehete, P.N., Arlinghaus, R.B., Sastry, K.J., Satterfield, W.C., and Matherne, C.M. HIV-specific T-cell responses in rhesus monkeys immunized with synthetic peptides from gp160. *In:* Vaccines 93, pp. 91-94. R.A. Lerner, F. Brown, and H.S. Ginsberg (eds.). Cold Spring Harbor Laboratory Press, Cold Spring Harbor, NY, 1993

4. Sastry, K.J., Nehete, P., Casement, K., and Arlinghaus, R.B. Some synthetic peptides representing HIV-specific CTL epitopes fail to induce CTL responses in vivo: Implications for vaccine development. *In:* Vaccines 94, pp. 175-180. F. Brown, R. Chanock, H. Ginsberg, and E. Norrby (eds.). Cold Spring Harbor Laboratory Press, Cold Spring Harbor, NY, 1994

5. Nehete, P.N., Arlinghaus, R.B., and Sastry, K.J. V3 loop synthetic peptides block infection and syncytium formation by HIV-1. *In:* Vaccines 94, pp. 285-289. F. Brown, R. Chanock, H. Ginsberg, and E. Norrby (eds.). Cold Spring Harbor Laboratory Press, Cold Spring Harbor, NY, 1994

Patents Issued:

1. Patent No. 666160-Australia, May 20, 1996. Methods and compositions for eliciting cytotoxic T-lymphocyte responses against viruses. Australian Patent Application No. 32339/93 based on PCT/US92/10378 and US Serial Nos. 07/800,932 and 07/945,865. Inventors: K.J. Sastry, R.B. Arlinghaus, C.D. Platsoucas and P.N. Nehete.

2. CD4 peptides for binding to viral envelope proteins (SN 08/115,171), June 17, 1996. Inventors: V.A. Dwyer, K.J. Sastry, R.B. Arlinghaus and P.N. Nehete (UTSC:331).

Patents Pending:

1. Methods and compositions for the priming of specific cytotoxic T lymphocyte response (SN 07/800,932), filed December 2, 1991. Inventors: K.J. Sastry, R.B. Arlinghaus and C.D. Platsoucas. This patent describes a novel and general method for screening potential viral-specific CTL-inducing peptides.

2. Compositions and methods for eliciting immune or anti-infective responses (SN 08/869,386), filed September 16, 1992. This actually constitutes a combination of two inventions: (a) enhancement and systemic spread of virus-specific CTL responses mediated by mixtures of helper T-cell and CTL inducing peptides. Inventors: K.J. Sastry, R. Arlinghaus and C. Platsoucas (UTSC:293); (b) Inhibition of HIV type-1 infection of human cells by synthetic peptides from gp120. Inventors: K.J. Sastry, R.B. Arlinghaus, C.D. Platsoucas and P.N. Nehete (UTSC:305).

Invention Disclosures:

1. Peptides for inhibiting the infection of target cells by lentiviruses. Inventors: K.J. Sastry, V.A. Dwyer, R.B. Arlinghaus and P.N. Nehete (UTSC:381).

2. HIV peptides for CTL induction. Inventors: K.J. Sastry, R.B. Arlinghaus and P.N. Nehete.

3. Synthetic peptides from human papillomavirus (HPV) as markers of protective immunity and as reagents for immunotherapy and prophylaxis of HPV-associated cervical cancer. Inventors: K.J. Sastry, G. Tortolero-Luna and M.F. Mitchell.